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IS 13282 (1991): Mine haulage tracks - Track sleepers - General requirements [MED 8: Mining Techniques and Equipment]

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Indian Standard

MINE HAULAGE TRACKS – TRACK SLEEPERS – GENERAL REQUIREMENTS

UDC 622·625·142

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

December 1991 **Price Group 2**

Mine Transportation Sectional Committee, HMD 8

FOREWORD

This Indian Standard was adopted by the Bureau of Indian Standards after the draft finalized by the Mine Transportation Sectional Committee had been approved by the Heavy Mechanical Engineering Division Council.

The prevailing conditions in mines are generally humid and hot. Some mines are very wet, especially the coal mining places where hydraulic sand stowing is practised. Indian coals are liable to spontaneous heating, which subsequently may cause fire. Besides, some mines are gassy which may cause explosion and subsequent fire. Thus to reduce the spread of any fire, the timber used in mines shall also be treated for fire resistance unless otherwise considered safe by users.

Wooden sleepers are commonly being used almost in all mines. However, due to fast deforestation and lesser availability of wooden sleepers, due consideration is being given for use of steel and concrete sleepers, and they have been permitted in the standard. However their detailed requirements will be included in the standard at a later date.

In the preparation of this standard, assistance has been drawn from NCB : 537 - 1968 'Sleepers of timber for use in underground' published by, National Coal Board, UK. Also the practices prevailing in some other countries have been considered.

References to the following Indian Standards may be useful in understanding and appreciating the requirements given in this standard:

IS No.	*Title*
707 : 1976	Glossary of terms applicable to timber technology and utilization (*second revision*)
1150 : 1976	Trade names and abbreviated symbols for timber species (*second revision*)
4424 : 1967	Use of timber in coal mines

Notwithstanding the requirements of Statutory Bodies or specified otherwise for track sleepers for use in underground mine transport system, the requirements given in this standard are expected to provide uniform practice of standardization of this product.

Indian Standard

MINE HAULAGE TRACKS – TRACK SLEEPERS – GENERAL REQUIREMENTS

1 SCOPE

1.1 This standard covers the general requirements for track sleepers for use in underground mine transport system for laying out haulage tracks.

1.2 This standard shall apply to sleepers of lengths between 1 000 mm and 2 000 mm.

1.3 The track sleepers covered by this standard shall be used for underground tub transport or mine car transport rail lines.

2 REFERENCES

The following standards are necessary adjuncts to this standard:

IS No.	*Title*
401 : 1982	Code of practice for preservation of timber (*third revision*)
4424 : 1967	Use of timber in coal mines

3 MATERIAL

The track sleepers may be made from wood, steel or concrete.

3.1 Wooden Sleepers

3.1.1 Wooden sleepers shall be manufactured from hard wood or soft wood. Soft wood sleepers shall be provided with pad plates under rail seat.

3.1.2 Species of timber suitable for track sleepers are given in Annex A and shall conform to IS 4424 : 1967.

3.1.3 Species not specified in Annex A shall not be supplied without prior consent in writing of the user.

3.1.4 The wooden sleepers shall be well seasoned, of sound quality, straight and well sawn on all the four sides.

3.1.5 Sides of the sleepers shall be sawn in such a way that top and bottom faces are parallel to each other.

3.1.6 Wooden sleepers shall be free from following defects:

a) Sap rot,
b) Hollows at ends,
c) Cross breaks, and
d) Large holes.

3.1.6.1 Following defects may be permitted but they shall not exceed the limits given in IS 4424 : 1967:

a) Dead streaks,
b) Decay,
c) Checks and splits
d) Hollow heart,
e) Rot,
f) Ring shake,
g) Insect damage,
h) Unsound knots, and
j) Sound knots

3.1.7 *Treatment and Preservations*

Wooden sleepers shall be pretreated before use as per IS 401 : 1982.

3.1.8 *Dimensions*

3.1.8.1 The dimensions in mm, of sleepers shall be as indicated below:

	Minimum Width	*Minimum Thickness*	*Minimum Length*
Tub sleepers	127	63	950
	127	63	1 000
	127	63	1 000
	152	76	950
	152	76	1 000
	152	76	1 080
Mine car sleepers	203	101	1 080
	203	101	1 250
	203	101	1 400
	203	101	1 525
	203	101	1 680
	203	101	1 850

3.1.8.2 Length of the sleepers shall be measured between the extreme ends accurate to 10 mm.

3.1.8.3 The cross-section dimension (breadth and width) shall be measured at the centre portion of the length of the sleeper accurate to 2 mm.

3.2 Steel Sleepers

3.2.1 In cases where steel sleepers are well packed and ballasted, they give service better than wooden sleepers.

3.2.2 A satisfactory track may be obtained by using steel sleepers in conjunction with timber sleepers. Track spread on curves may be greatly reduced by spacing steel sleepers, which are more rigid, between timber ones. Steel sleepers may be easily stacked in restricted spaces.

3.2.3 Due regard shall be paid to steel sleeper's susceptibility to corrosion in pit water, to the cost of the sleepers by comparison with timber sleepers and to their rigidity, compared to natural flexibility of timber sleepers.

3.2.4 Various sections of steel sleepers are shown in Fig. 1, 2 and 3.

3.2.5 Fastening of rails with sleepers shall be done with the help of clips and square necked bolts fitting into square holes in steel sleeper. This arrangement is illustrated in Fig. 4.

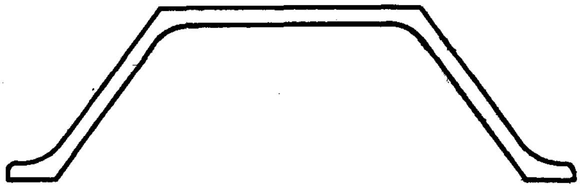

FIG. 1 8 kg/m TROUGH SECTION

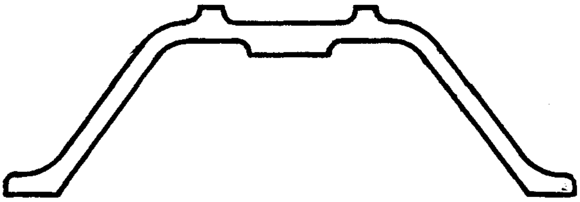

FIG. 2 9 kg/m TROUGH SECTION

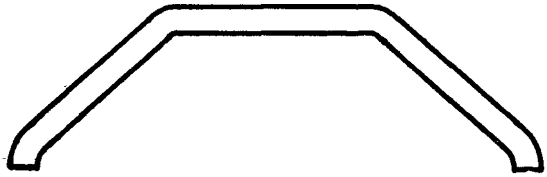

FIG. 3 10 kg/m TROUGH SECTION

3.2.6 Typical illustration of fastening of steel sleepers with rails located in milled seating, the screw securing the fixed clip burred over at the end of the thread to prevent loss is given in Fig. 5.

3.2.6.1 The fastening shall be such that rail over sleeper shall fix in a proper alignment and gauge.

3.3 Concrete Sleepers

Prestressed construction concrete sleepers may also be used as track sleepers. These sleepers have least effect of moisture and are more rigid, if installed properly.

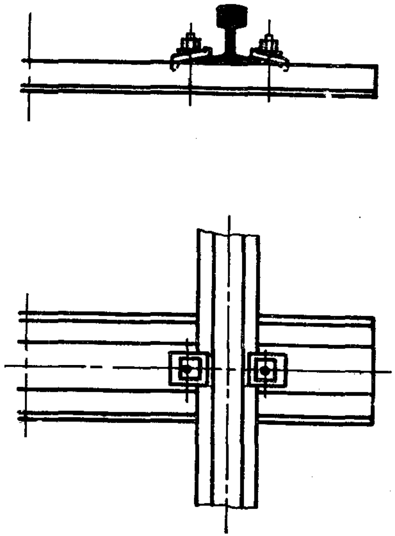

FIG. 4 TYPICAL ILLUSTRATIONS OF FASTENING OF SLEEPERS WITH CLIPS AND SQUARE NECKED BOLTS

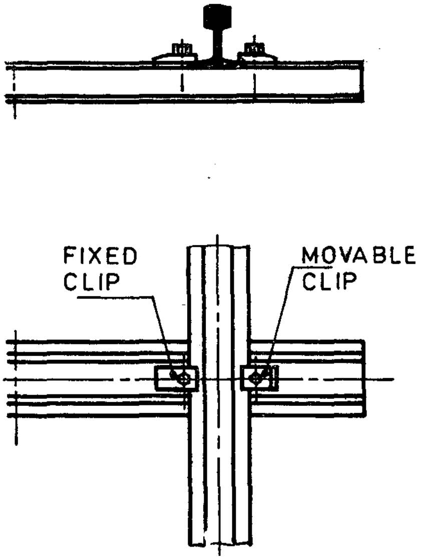

FIG. 5 TYPICAL ILLUSTRATIONS OF FASTENING OF STEEL SLEEPERS WITH SCREWS AND CLIPS

ANNEX A

(*Clauses* 3.1.2 *and* 3.1.3)

SPECIES OF TIMBER RECOMMENDED FOR TRACK SLEEPERS FOR USE IN UNDERGROUND MINES

Sl No.	Species	Trade Name	Abbreviation
1)	*Acacia arabica Willd*	*babul*	BAB
2)	*Acacia catechu Willd.*	*khair*	KHA
3)	*Adina Cordifolia (Roxb.) Hook, f.*	*haldu*	HAL
4)	*Albizzia chinensis (Osbeck) Merr.*	*siris*	SIR
5)	*Albizzia lebbeck Benth*	*kokko*	KOK
6)	*Anogessus latifolia Wall*	*axlewood (bakli)*	AXL
7)	*Bridelia retusa spreng.*	*kasi*	KAS
8)	*Casuarine equisetifolia Linn*	*casuarina*	CAS
9)	*Diospyros sp.*	*ebony*	EBO
10)	*Lagerstroemia speciosa, Pers.*	*jarul*	JAR
11)	*Lagerstroemia lanceolata. Wall.*	*benteak*	BEN
12)	*Lagerstroemia parviflora, Roxb.*	*lendi*	LEN
13)	*Madhuca sp.*	*mahua*	MAU
14)	*Ougeinia dalbergioides, Benth*	*sandan*	SAD
15)	*Pterocarpus marsupium, Roxb.*	*bijasal*	BIJ
16)	*Shorea robusta Gaertn. f.*	*sal*	SAL
17)	*Syzygium sp.*	*jaman*	JAM
18)	*Terminalia arjuna W & A*	*arjun*	ARJ
19)	*Terminalia paniculata, Roth.*	*kindal*	KIN
20)	*Terminalia tomentosa Wight et Arn.*	*laurel*	LAU

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